

# Evaluation of Drug Abuse Rehabilitation Efforts: A Review

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**Abstract:** During the 1960s, three modalities of treatment aimed at rehabilitation of the drug abuser (methadone maintenance, outpatient drug free treatment, and the residential therapeutic community) were developed. Large amounts of public and private monies have gone to supporting these modalities; little evaluation as to the efficacy of such rehabilitation efforts has been done.

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This paper attempts to delineate the evaluative research efforts undertaken in the drug abuse field to date. In addition, the findings of an eight-year evaluation of six drug treatment programs in Newark, NJ are presented. The authors propose a paradigm for quick, effective evaluation of drug and alcohol programs at minimal cost. (*Am J Public Health* 69:1164-1169, 1979.)

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In the late 1960s, in response to public concern over the burgeoning drug abuse epidemic, the federal government began to fund drug abuse programs on a large scale. Federal funding has since increased by leaps and bounds. For the fiscal year 1969, the total federal budget for drug abuse control activities including treatment, prevention, education and law enforcement was \$82 million; for 1976, it was \$771 million, a 950 per cent increase.<sup>1</sup> A sizable proportion of this money has been spent on drug abuse treatment and rehabilitation. For example, between 1968-1977, \$845 million was spent by the federal government on drug treatment alone.

It would be reasonable to assume that after 10 years of continuous, large scale funding of rehabilitation programs (and of the bureaucracies which administer them), there would be some consensus about what types of programs work and for whom they work. Unfortunately, although some evaluation efforts have been made, most programs have not been properly evaluated. In view of the persisting problem of substance abuse and the dwindling of financial resources devoted to rehabilitation efforts, this would seem to be a propitious time to review evaluation studies with a particular emphasis on our own studies carried out over the last eight years.

Three different types of treatment for drug abuse evolved during the 1960s: the residential therapeutic commu-

nity, methadone maintenance, and the outpatient drug-free treatment. The therapeutic community was started in 1958 by ex-alcoholic Charles Dederich who founded Synanon, a residential structured milieu in which the addict was supposedly "restructured" into a productive citizen through encounter groups and other forms of therapy.<sup>2, 3</sup> Many programs for which Synanon served as the prototype flourish today; among the better known of these are Phoenix House and Daytop Village.

In 1964, Drs. Vincent Dole and Marie Nyswander of the Rockefeller University received a small grant from the Health Research Council of New York City to conduct experiments on maintaining addicts on the long-acting synthetic opiate, methadone. Their first report, in 1965, indicated success with 22 addicts; by 1966, they were treating 750 addicts.<sup>4, 5</sup> The theory behind methadone maintenance was that, by providing and stabilizing an addict on a fairly large dose (80 to 120 mg per day) of methadone, the opiate receptors in the brain would become blocked, the craving for narcotics would vanish, and the addict would no longer commit crimes to pay for drugs but would be able to hold a job and normalize family and other social relationships. The early methadone maintenance programs were characterized by extreme care in patient selection and careful, ongoing counseling of those admitted to the programs; later programs have tended to accept most opiate addicts who apply and, because of budget constraints, counseling in methadone programs tends to be minimal. It should also be noted that dosage levels today tend to be lower (around 50 mg) than the early dosage recommended by Dole and Nyswander.

The third type of treatment, the outpatient drug-free program, began as the result of the need for non-residential centers in the addicts' own communities to which addicts

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might turn in "crisis" situations. These programs developed into ongoing counseling centers, generally, but not always, staffed by former addicts indigenous to the community.

## Evaluation

Evaluation of drug treatment programs may be categorized in several ways. First and simplest is the intramural as contrasted to the extramural study; in the former, a program employs its own evaluator, whereas an outside agent performs the evaluation in the latter. Studies may also be categorized as:

- epidemiological, in which characteristics predisposing to addiction or to readiness for rehabilitation are sought;
- sociological, in which the social forces affecting addiction are explored; and
- psychological, in which personal traits of addicts are studied.

The majority of evaluation studies in the drug abuse field are epidemiological, stressing either "predictor variables" or correlations of client characteristics with some sort of criteria for successful treatment. Finally, evaluative studies may be differentiated into those which evaluate in-treatment program success, such as retention in treatment or short-term psychological change, and those which study programs in terms of post-treatment client outcome. The latter usually employ client status in regard to employment, criminal activity, and use of drugs as the indices of program success or failure.

Although studies can be easily categorized, they cannot, unfortunately, be easily compared, because the standards by which different researchers measure success and failure vary widely. Success in methadone maintenance, for example, has been variously defined as program retention, reduced arrest rate, abstinence, improved interpersonal relationships, etc. Much the same farrago of definitions may be found in studies of therapeutic communities and ambulatory programs. Furthermore, because of the generic differences in the three major types of treatment for drug abuse, it is very difficult to compare these treatments—to say, for example, that a given methadone program is more successful than a given therapeutic community. The stated goals of the programs themselves differ greatly, as do, in many cases, the populations served by programs. Methadone maintenance, for example, tends to be a "treatment of last resort" and thus draws an older clientele with longer histories of drug use and criminality than that of therapeutic communities. Thus, comparisons between modalities must be made cautiously.

Even in discussing different treatment programs within a given modality there are caveats. Within each treatment type, there exist wide varieties of staffing patterns, client demographic characteristics and therapeutic regimens, and these factors all influence treatment process and post-treatment outcome. Indeed, even within the same program, there may be different treatment sites geared to treating different kinds of drug abusers (e.g., the suburban middle-class poly-drug abuser as opposed to the inner city heroin addict) and,

obviously, the treatment regimens and the chances of successful client outcome will vary greatly at the different sites. Thus comparing programs within treatment categories can also be fraught with difficulties.

Despite all these difficulties, it is possible to draw some cautious conclusions about the efficacy of various program modalities from the existing evaluation literature. It should also be clear that evaluation programs can be established that do control for demographic and some psychosocial variables. Even if it is virtually impossible to control for characteristics such as personal motivation, evaluation programs can be of enormous value if they match treatment units by comparing client subgroups similar in important demographic and psychosocial characteristics. We will discuss evaluations of each type of treatment separately and then summarize our own extramural, standardized evaluations of six units encompassing the three major types of treatment.

## Treatment Modalities

### Methadone Maintenance

Of all types of treatment, methadone maintenance has been most systematically and thoroughly evaluated, doubtless because it is the one type of treatment in which professionals must be employed.

The prototype studies of methadone maintenance are those of Gearing and her associates at Columbia University School of Public Health. These studies, which have been ongoing since 1968, detail in capsule form the history of methadone maintenance. In the early studies,<sup>7-9</sup> Gearing found three-year retention rates in the New York City methadone programs of 75 per cent.<sup>10</sup> As the programs under review became larger and admission standards were relaxed so that addicts with psychological problems and those using other drugs in addition to opiates were admitted, three-year retention rates dropped to below the 60 per cent level.

In another study of a New York City methadone maintenance program, Cushman<sup>12</sup> noted that net retention over the 10-year period 1966-1976 was 63 percent but two-year retention rates by cohort remained high: Cohort I (1966-1972), 88 per cent; Cohort II (1972-1974), 85 per cent; and Cohort III (1975-1976), 77 per cent. Admission criteria for this program were not strict. In other methadone programs, however, retention has not been this high. In his study of over 30 drug programs nationwide, Sells, et al,<sup>13</sup> found one-year retention rates to be only 46 per cent in the methadone programs.

Follow-up studies of methadone maintenance clients who have been in treatment 18 months or longer have focused on social productivity (particularly employment, return to school, and so forth), and reduction in criminal activity. Gearing found 54 per cent of clients increased productivity and reduced criminal activity;<sup>11</sup> Cushman<sup>12</sup> also found increased employment among all cohorts but noted that social productivity was not as impressive as might have been expected from the results of early studies. Other studies showing increased employment among methadone patients include those by Krakowski and Smart,<sup>14</sup> Babst, Chambers and Warner,<sup>15</sup> and Lang, Stimmel and Brown.<sup>16</sup> Williams

and Lee<sup>17</sup> compared methadone treatment drop-outs with those remaining in treatment and found a significantly greater rise in employment among the treatment-remainers. Rosenberg, Davidson and Patch<sup>18</sup> reported similar findings, as did Sells, et al,<sup>13, 19</sup> in a nationwide cross sectional study of drug treatment programs.

All these studies judge employment on a point-in-time basis, i.e., the client's employment status upon program admission is compared with his/her employment status at some later date. In an interesting criticism of this method of measuring increase in employment, Block, Ellis and Spielman<sup>30</sup> compare point-in-time evaluation to period evaluation—that is, assessing employment status during a period of time prior to treatment and then again during treatment up to the point of evaluation. In comparing results of the two methods in a small study of methadone clients (N = 37), they found that, using the "point-in-time" method, employment rates for these clients rose 56 per cent whereas, using the "period" method, rates rose only 17 per cent. Although this study is not definitive, it does offer a better design for future studies of employment and also suggests that the current figures on rise in employment rehabilitation efforts should be viewed cautiously.

Lowered arrest rates among clients on methadone maintenance are also considered a criterion for success and are indeed noted among patients in most of the aforementioned studies. It should be emphasized, however, that it is *decrease in* and not *cessation of* criminal activity that is found. Few studies distinguish between drug-related criminal activity (usually defined as possession or use of drugs, or thefts for the purpose of obtaining drugs) and non-drug related criminal activity, probably because this is extremely difficult, sometimes impossible, to do. One study in which this distinction was attempted<sup>21</sup> found a significant drop in drug related criminal acts. It may very well be that the decrease in criminal activity among methadone clients to a large extent reflects a slackening in drug-related crimes.

There is no adequate information on use of other opiates by methadone maintenance patients. Use of non-opiate drugs, including alcohol, has been studied to some extent.

Gearing<sup>22</sup> reported that, among clients in the New York City programs, 20 per cent experienced some alcohol problems and 16 per cent of involuntary discharges were alcohol-related. Senay, et al,<sup>23</sup> in a nationwide survey of 38 methadone clinic physicians, found that tranquilizers and other sedatives pose a problem with only a very small number of methadone clients, whereas alcohol is generally perceived as a serious problem among this population.

In a study just completed at the New Jersey Medical School of a large methadone program (N = 500) in Newark, New Jersey, we found results similar to those summarized above. Clients in methadone treatment 18 months or longer were followed up and interviewed, with special attention paid to the "success" indices of employment, criminal activity, and abuse of drugs. The results were compared to those for therapeutic community graduates and a group of no-treatment controls.

Table 1 shows graduate employment during the two months prior to admission to treatment and contrasts it with employment during the year prior to the post treatment interview, two years after admission to the program. Race, sex, age, and education showed no significant influence on work status. Thirty-two per cent of clients showed substantially increased social productivity after two years on methadone maintenance. Although this is not striking, the changes between pre- and post-treatment employment are strongly in the direction of more employment after some time in the program. This change becomes more impressive when compared with the differences in no treatment employment between the first and second (18 months later) interviews (Table 1). There were no improvements to be found over time in this non-treatment group's employment status. Table 1 also shows a significantly lower post-treatment employment rate among methadone maintenance clients than among therapeutic community clients. This finding may be partially explained by the fact that many therapeutic community graduates are employed by their own or other drug treatment programs, while methadone maintenance clients, on the whole, cannot find such employment. Other factors hampering comparison have been or will be discussed.

**TABLE 1—Pre-Treatment Employment Contrasted with Post-Treatment Employment of Treatment Completers and a Comparison Group**

Employment	Therapeutic Communities									
	Methadone Maintenance		Therapeutic Communities						No Treatment Group	
	Pre <sup>1</sup>	Post <sup>2</sup>	Dare		Integrity		Odyssey		Pre	Post
Unemployed (%)	72	40	61	19	63	15	69	23	49	64
Working Part Time (%)	9	20	28	15	19	4	16	15	22	22
Working Full Time <sup>3</sup> (%)	19	40	11	66	18	81	15	62	29	14

1. Indicates work status during the two months prior to treatment admission.

2. Indicates work status during a 12-month period prior to the post-treatment interview conducted 18–24 months after the "pre" interview.

3. In post-treatment data, "working full time" indicates those persons working 35 or more hours per week for at least 7 consecutive months during the year prior to the post-treatment interview.

## Therapeutic Communities

Therapeutic communities usually have much lower retention rates<sup>24</sup> than methadone maintenance programs, probably because they demand much more from the client in terms of commitment of both time and emotion. Retention rates range from 10 to 50 per cent but are often confounded by intramural researchers' methods of counting; e.g., often only those persons who stay at least four weeks are counted in the retention rates.<sup>25</sup>

Follow-up studies of therapeutic communities have focused on the three success criteria of presence of social productivity, and absence of criminal activity and drug abuse. Because the treatment completion rate is so low, researchers have studied both graduates and dropouts and have generally found that increased length of time in treatment tends to correlate with positive life-style changes.

Collier and Hijazi<sup>26</sup> studied graduates and dropouts of Daytop Village and found high success rates on the above three indices. However, they managed to locate only 64 per cent of the graduates and 39 per cent of the dropouts. It is questionable whether their success rates would have held up had the large group of nonresponders been found. DeLeon, Holland and Rosenthal<sup>27</sup> studied dropouts from Phoenix House and found strong correlations between length of time in treatment and improvement from pre-treatment status on seven psychopathology scales.

Both of these were intramural studies, neither of which looked at a comparison non-treatment group. On the other hand, in a recent study by Bale and associates<sup>28</sup> at a Veterans Administration Hospital in California, detoxification patients were randomly assigned to one of three treatment agencies—a short-term therapeutic community, a long-term therapeutic community, and a methadone maintenance program. These patients were interviewed during detoxification and again two years after admission to treatment as were a group of detoxification-only controls. Results were somewhat mixed. While the long-term therapeutic community clients showed improvement on all indices over the other groups, the methadone clients did not. The methadone maintenance group was no less likely to be using heroin and no more socially productive than the detoxification-only control group.

In another study, Jenkins and associates<sup>29</sup> followed three small (N = 50) groups in a therapeutic community—treatment completers, treatment dropouts and a no-treatment comparison group—and measured them on several scales including drug taking and maladaptive behavior before treatment and 12 to 18 months later. Consistently strong correlations were found between time in treatment and improvement on the various scales with the no-treatment controls showing no improvement and the treatment completers showing the greatest improvement.

Holland,<sup>30</sup> in looking at reduction in criminal behavior among residents in a Chicago therapeutic community, found no improvement on this index among an early dropout group, an 81 per cent reduction in a late dropout group, and a 97 per cent reduction in the treatment-completers group. Comparable results have been noted by Aron and Daily,<sup>31</sup>

DeLeon, Holland and Rosenthal,<sup>27</sup> and by DeAngelis, McCaslin and Ungerleider.<sup>32</sup>

Our studies at the New Jersey Medical School of graduates and dropouts of Newark therapeutic communities showed very similar results. Rise in employment among therapeutic community graduates averaged 45 per cent (Table 1) and decrease in criminal activity and drug use was also found.

Finally, it should be noted that in the few studies in which therapeutic community programs and methadone maintenance programs have been studied simultaneously and compared,<sup>19, 28, 33</sup> there is agreement that therapeutic community late dropouts and graduates perform more favorably on success indices than do long-term methadone maintenance patients. Balanced against this, however, is the much smaller number of patients that therapeutic communities treat as compared to methadone programs, the much lower retention rates in therapeutic communities, and the higher cost of treating patients in a therapeutic community (\$5,670 per patient per year as compared to \$1,940 for outpatient methadone)\*

## Ambulatory Drug Free Units

It is almost impossible to find evaluations of ambulatory drug free programs. Perhaps because these programs are of a "crisis" nature and because they tend not to last long, they have seldom been evaluated. At the New Jersey Medical School, we attempted to evaluate two such centers in Newark. Retention rates at both programs were very low and, consequently, there were virtually no graduates. An assessment of dropouts from these programs indicated that the programs were quite limited in benefit.

## Summary and Conclusions

It seems clear from the above that both methadone maintenance programs and therapeutic communities may be beneficial in the treatment of drug abuse both for the individual addict (as seen in increases in social productivity) and for society at large (as seen in reduced crime rates). However, the work of Bale, et al,<sup>28</sup> reports no benefit from methadone. This is one of only a few studies with proper controls. Other studies with a no-treatment group have shown clearly beneficial effects.<sup>29</sup> It may be that the negative results by Bale and associates reflect differences in drug using populations; the preponderance of recent Vietnam veterans may have resulted in a different outcome than was found in studies on inner city, nonveteran populations.

It is obvious that beneficial results of methadone maintenance as a modality do not ensure that virtually every methadone program will succeed. Similarly, some therapeutic communities have substantial success whereas others are failures. Our results in Newark between 1969 and 1977 are

\*Letter dated October 25, 1978, to Program Directors of NIDA (National Institute on Drug Abuse) programs, from Robert J. Robertson, Director, Division of Community Assistance, NIDA, outlining allowable funding levels for fiscal year 1979-1980.

relevant in this regard. Under our purview six programs of different types and one additional program added during the eight-year study period, were studied. The data were gathered by the evaluation unit's own investigators using standardized questionnaires and forms; the data were stored in our own computer, and we had control over the central intake unit. Each program was judged on the basis of retention rates and the success of graduates and dropouts. Although participants in each program were for the most part self-selected, programs could be compared by matching retention rates of the subgroups within each program matched for demographic and psychosocial variables.<sup>34</sup> Furthermore, the treatment process was evaluated at each participating unit. The results were not encouraging. Two of the first three therapeutic communities involved in treating Newark addicts were clear failures and were closed, one (Odyssey House) because of an inability to retain clients, the other (DARE) because of alleged misuse of funds and mistreatment of clients; the third (Integrity House) combined reasonably good retention rates with good post-treatment results of both graduates and dropouts and remained open. An additional therapeutic community has been added and preliminary evaluation is encouraging. Only one of two outpatient programs offered any benefits at all; despite this, two new outpatient drug-free units have been funded.

At present in Newark there are eight drug abuse programs, none presently undergoing any sort of adequate evaluation. Of the eight, one methadone and one therapeutic community have been evaluated and found useful. The new therapeutic community has had limited though encouraging evaluation, one outpatient program of no documented benefit has been allowed to continue with full funding and three outpatient programs of uncertain merit are funded without evaluation. Thus one-half the programs have never been evaluated or were evaluated and should have been discontinued.

These studies emphasize the fact that *every* program should have extramural evaluation. This has not been and is not now the case in the United States. In New York State, the Drug Abuse Control Commission spent about \$1 billion before any meaningful evaluation was initiated. In the 10-year period 1968 to 1977, the National Institute on Drug Abuse spent \$845 million on rehabilitation and only \$9 million on evaluation, much of the latter either essentially intramural or non-standardized. Hundreds of millions of dollars have been wasted on ineffective drug abuse rehabilitation programs. Presumably many of these programs could have been substantially improved by modifications based on information obtained by extramural evaluation analysis.

It seems to us that evaluation need be neither onerous nor inordinately expensive. We believe that we have created a model for evaluation which can be easily and fairly inexpensively applied elsewhere and is applicable to a variety of social problems including the treatment of illicit drug abuse, alcohol dependency, and juvenile delinquency. The proposed chronology of such evaluation is as follows:

Year 1: Begin retention study

Year 2: First results of retention; prepare for dropout follow-up

Year 3: Begin dropout and graduate studies

To reduce expenses, retention can be analyzed by using standardized demographic and psychosocial questionnaires that are administered intramurally by the program itself with a small extramural team studying a randomly chosen or a stratified subgroup of the program clients. Thus the bulk of the evaluation would be performed by the program itself, the extramural team utilizing the program's data. Follow-up activities, beginning in year 3, would be conducted by the extramural unit.

In summary, two of the treatment modalities developed during the 1960s (the therapeutic community and methadone maintenance) have been shown over the last decade to be useful ways of treating the drug abuser, but there are striking differences in efficacy among the various programs within each modality. Ongoing extramural evaluation of individual programs is essential, both to provide programs with valuable feedback that may lead to treatment modifications and to assure that the monies available are expended to the greatest possible benefit of the drug abuser and of society.

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### OSHA Concentration Limits for Gases and Vapors

Analytical Instrument Development, Inc., offers a wall chart which lists all of the OSHA concentrations for gases and vapors. This 11 × 20 inch chart can be placed on the wall for an immediate reference. The chart also notes analytical methods for the measurement of these 320 compounds. Recently updated, this chart reflects the most recent status of the compounds OSHA deems hazardous. To receive one of these charts contact: Analytical Instrument Development, Inc., Route 41 & Newark Road, Avondale, PA 19311.